Instantaneous Electronics Information Board

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***Abstract* - The main objective of the paper is to model the Personal Computer driven Electronic Information Board in order to replace the conventional notice boards. This is used to provide information to students in schools and colleges instantaneously. This project is developed using raspberry pi and JavaScript coding. Raspberry pi is a series of credit-sized single board computer. Power consumption can be reduced by using raspberry pi. This model can be implemented in colleges, schools and various institutions where requires the same information should be broadcast to all.**

The goal of the project is to upload the images and messages into the server and display in into several displays connected together in the network.

***Keywords:* Personal Computer, Raspberry pi, Information Board**

I.INTRODUCTION

Notice Board is a primary thing in any institution or organization or some places like railway stations, bus stands, schools and colleges. But sticking various notices day-to-day is a difficult process. This notice display requires a separate person to take care. This idea eliminates the manual work load in displaying notices and in turn enables the authenticated user to send the notices or messages from their room itself using the Personal Computer. The remote operation is because of Embedded Systems which results in several attractive applications which make sure of security and comfort for human life. In this system, if the user wants to display some messages, he/she can send the messages and notices through the personal computer, which will be transmitted through the Ethernet and it will be displayed in several displays connected together in the network. Authentication is provided which will enable only authenticated user to send the notices and messages. In the same way, only authenticated users were able to view the notices and information instantaneously by typing the respective passwords in the login page created using JavaScript.

II. RELATED WORKS

Many works were done over the past years for the development of Electronic notice boards. The model for displaying notices in colleges on digital notice board by sending messages in form of SMS through mobile which is a wireless transmission system which has very less errors and maintenance [4]. The hardware board contain microcontroller AT 89c52, the heart of the system which is interfaced with GSM modem through MAX232 level converter. It is used to convert RS232 voltage levels to TTL voltage and vice versa. The EEPROM is used to store the timing and a message to be displayed hardware also contains a real time clock DS1307 to maintain tracking time. A LCD display is connected to microcontroller for display. Coding for microcontroller is done using Embedded C. Coding for Personal Computer is done using visual basic. Password is provided for the authorized users to update notices on the digital notice board. Researchers also use a PC with an administrator for monitoring the system. The wireless communication has announced its arrival and the world is going mobile [3]. This remote control of appliances is possible through the use for the embedded system communication has given rise to many interesting applications that ensures comfort and safety to the life of human , the proposed is to design a model where the message to be displayed is sent through a SMS from an authorized transmitter. The receiver receives the message and displays the desired information after necessary code conversion. Also the global advertising landscape has seen a dramatic transformation over the past decade. For developing GSM based applications we need to have some common peripherals including GSM, microcontroller, LCD (liquid crystal displayed), power supply and also some connecting wires. The proposed model is mainly focused to reduce the consumption of paper and time. Users can able to view the notices of their choices by selecting the respective options and thereby the printing and photocopying cost will be reduced.

III.PROPOSED WORK

The block diagram consists of Personal Computer which is used to send the messages and notices, power supply and displays. The device is powered by 5V micro USB. Only the authenticated user is allowed to send the messages. The raspberry pi connected to LAN by using RJ45 cable is act as a server and it is powered by the power supply. The notices can be accessed in any computer connected in Network by giving the password and user Id.

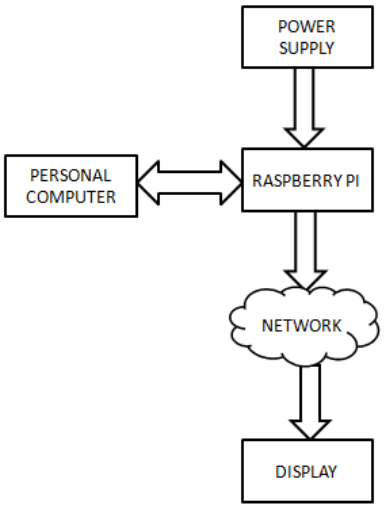

Fig.1.Block diagram

IV.COMPONENTS

A.RASPBERRY PI

The Raspberry Pi is a credit-card sized general purpose Linux computer designed and manufactured by the Raspberry Pi Foundation. It is dedicated to making computers and programming instruction as accessible as possible to the widest number of people. There are different models available in Raspberry pi. We are using Raspberry pi 2 model B. It is the heart of our project. It has Broadcom BCM2836 Arm7 Quad Core Processor powered with Single Board Computer running at 900MHz, 40 pin GPIO, 4 USB ports, one GB RAM suitable for many powerful applications and Micro SD port which is used for inserting memory card. The Operating System is loaded into the Raspberry pi by means of the memory card. The size of the memory card should be more than 4 GB. The device is powered by 5V. So 5V micro USB power supply is preferred. Initially the OS is downloaded and converted into the image. Then the converted image is copied into the Micro SD card. Then it is inserted into the Raspberry pi and it is booted.

Fig.2.Raspberry pi 2 model B

After booting, the user credentials like the username and password will be asked. Raspberry Pi has a default user name and password.

The credentials are:

Login: pi

Password: raspberry

The password can be changed by the following command. Passwd pi.

B.IP ADDRESS

IP address, Internet Protocol address is essential for each and every component connected in the network. It is necessary for identifying itself and for communicating with other devices using the address. It is a label in the form of numerals assigned to all devices connected in the network. IP protocol is used for communication. After connecting to the network using RJ45 cable the IP address of the Raspberry pi can be found by typing hostname –I command in the terminal.

C.WEB SERVER

Apache is a popular web server application. In order to make the Raspberry pi as a web server it is installed on the Raspberry Pi and enables it to serve web pages. HTML files are stored in the web folder www. The default web page is served by typing IP address from another computer on the network. This default web page is just an HTML file on the file system; it is located at /var/www/index.html. This can be changed and it can be replaced by another file.

Apache web server is installed by means of the command sudo apt-get install apache2 –y

D.PROGRAMMING

Java Script is a dynamic programming language. It is used mostly as part of web browsers. The implementation of Java Script programming allows client-side scripts, to control the browser, to interact with the user, to communicate and alter the document content that is displayed. It is used in server-side network programming with run time environments such as game development, node js and the creation of desktop and mobile applications.

E.REMOTE ACCESS

MobaXterm is the ultimate toolbox for remote computing. MobaXterm is a terminal used mainly for Windows. It has inbuilt X11 server. It has SSH client and many other network tools for remote computing (VNC, RDP, telnet, rlogin). SSH is secured shell which enables the secured data transfer by means of encryption. Fig.3 is the home page of the MobaXterm terminal. Here for accessing the Raspberry pi remotely MobaXterm is used. For accessing it remotely login ID and password is needed. The session can be established by clicking session icon and proceeding further. The SSH session is created for connecting to end server remotely. For SSH session the IP address of the server is essential.

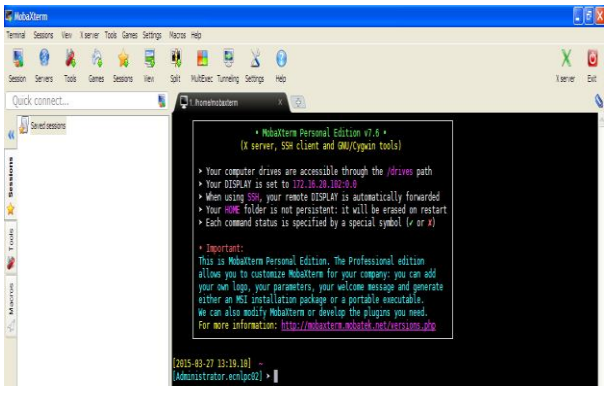

Fig.3.MobaXterm

IV.RESULTS

The following figure Fig.3 shows the experimental setup of our kit.

Fig.4.Experiment setup

The notices and messages can be uploaded into the server by login into the raspberry pi remotely using MobaXterm.

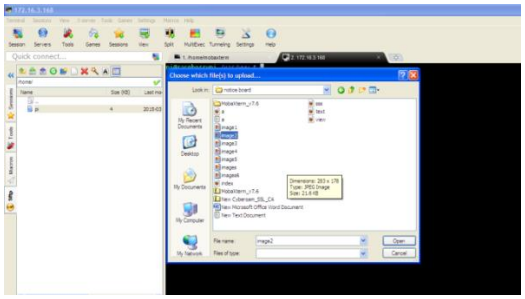

Fig.5. Uploading images

The notices can be viewed in the receiver side by accessing the server using the IP address. Fig.6 is the first login page designed using JavaScript. This page can be viewed by typing the IP address in any computer connected in the network.

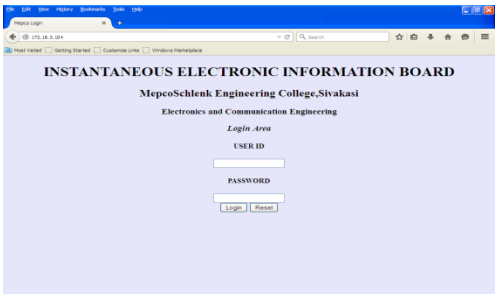

Fig.6. Login page

Once the User ID and password is correct the next page will be displayed. Different notices can be viewed by clicking the respective buttons available.

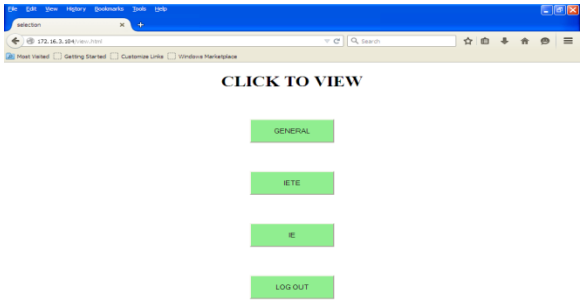

Fig.7.Selection

Fig.7 is the second webpage which will be displayed once the credentials are correct. The notices and messages can be viewed as shown in Fig.8

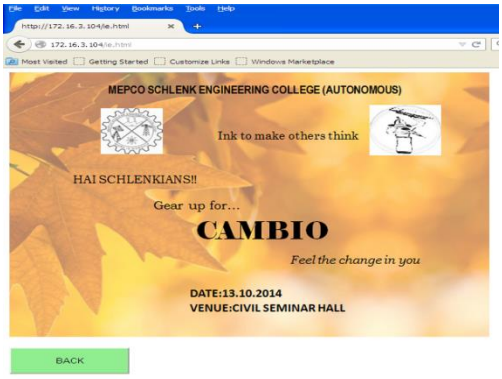

Fig.8. Notice Display

V.CONCLUSION

This paper presents the design and implementation of the Personal Computer driven instantaneous electronic information board. It is concluded that by the implementation of this project the usage of conventional notice board can be replaced. This system was developed to minimize the consumption of time and paper and it also reduces the manual work of maintaining the notice board. It can be implemented in colleges, institutions and schools where the information needed to be passed instantaneously. The advantages of this project are

1. A lot of interaction and information sharing occurs.
2. No printing and photocopying costs.
3. No manual effort.
4. Helps to retain and develop the knowledge base of your college or office.
5. Saves Time, Energy and finally Environment.

VI.REFERENCES

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